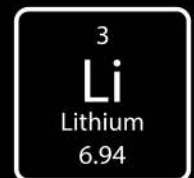




LITHIUM



WHAT IS LITHIUM?

Lithium is a chemical element with the symbol Li and atomic number 3. It is a soft, silvery-white alkali metal that is highly reactive and flammable. Lithium is the lightest metal and the least dense solid element at room temperature. It is commonly used in batteries, particularly in rechargeable lithium-ion batteries, as well as in ceramics, glass, lubricants, and psychiatric medication. Lithium is also found naturally in various minerals, brines, and salt flats.

DID YOU KNOW?

The transmutation of lithium to tritium was the first man-made nuclear fusion reaction.



LITHIUM

DID YOU KNOW?

Lithium is the lightest metal and the least dense solid element, with a density of about half that of water. In other words, if lithium didn't react with water (which it does, somewhat vigorously), it would float.

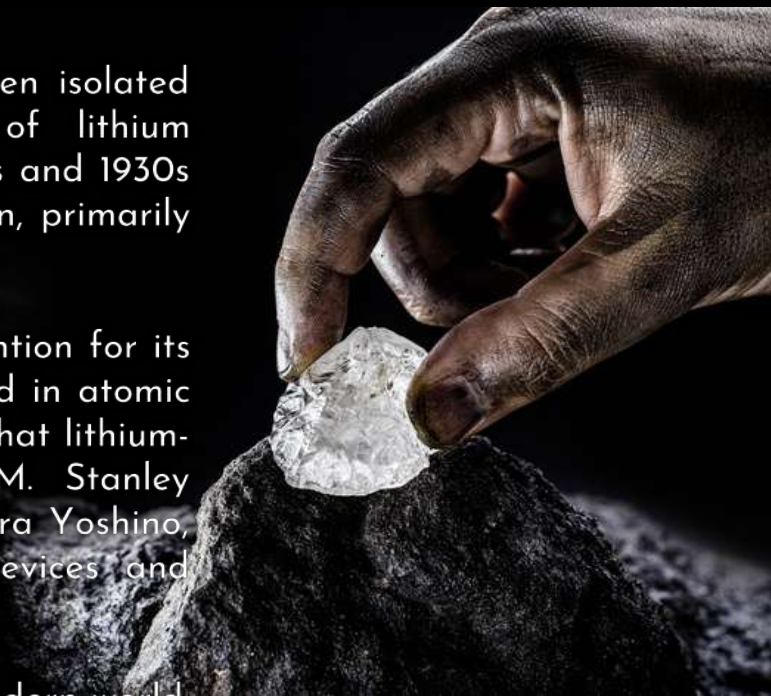
WHAT IS THE HISTORY OF LITHIUM?

The history of lithium dates back to the early 19th century, when Swedish chemist Johan August Arfwedson discovered the element in 1817 while analyzing petalite ore from the island of Utö in Sweden. He named the new alkali metal "lithium" after the Greek word for "stone," due to its discovery from a mineral.

In 1855, British chemist Augustus Matthiessen isolated lithium metal through the electrolysis of lithium chloride. However, it was not until the 1920s and 1930s that large-scale production of lithium began, primarily for use in lubricants and heat-resistant glass.

In the 1940s and 1950s, lithium gained attention for its potential use in nuclear fusion reactions and in atomic bombs. However, it was not until the 1970s that lithium-ion batteries were first developed by M. Stanley Whittingham, John B. Goodenough, and Akira Yoshino, which revolutionized portable electronic devices and electric vehicles.

Today, lithium is a crucial element in the modern world, with demand for lithium increasing rapidly due to its use in rechargeable batteries, particularly for electric vehicles and renewable energy storage systems.





LITHIUM

DID YOU KNOW?

Australia currently supplies about 55% of the world's lithium, but we only have 18% of the total lithium currently accessible, and an even smaller percentage of the total lithium resources. In South America, on the other hand, Chile, Argentina and Bolivia are known as the “Lithium Triangle” – estimated by the USGS to hold at least half of the total lithium in the world.

WHY IS LITHIUM AN IMPORTANT COMMODITY?

Lithium is an important commodity for several reasons.

Firstly, lithium is a key component in the production of rechargeable batteries, particularly lithium-ion batteries. These batteries are used in a wide range of portable electronic devices such as smartphones, laptops, and tablets, as well as in electric vehicles and renewable energy storage systems. The growing demand for electric vehicles and renewable energy systems has led to an increased demand for lithium, making it a crucial element for the transition to a more sustainable energy system.

Secondly, lithium is used in the production of ceramics, glass, and lubricants, as well as in the pharmaceutical industry. Lithium is also used to treat bipolar disorder and other psychiatric conditions.

Thirdly, lithium is a rare and valuable element, with limited global reserves and production. As demand for lithium increases, there are concerns about the sustainability of lithium mining and production, as well as the environmental and social impacts associated with its extraction.

Overall, lithium is an important commodity due to its critical role in the development of sustainable energy systems and its use in a range of industrial and medical applications.





LITHIUM

DID YOU KNOW?

Pure lithium metal is extremely corrosive and requires special handling. Because it reacts with air and water, the metal is stored under oil or enclosed in an inert atmosphere. When lithium catches fire, the reaction with oxygen makes it difficult to extinguish the flames.

HOW IS LITHIUM MINED?

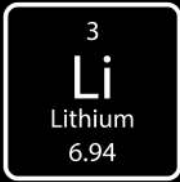
Lithium is primarily mined from two main sources: hard rock deposits and brine deposits.

Hard rock mining involves extracting lithium from pegmatite and spodumene deposits, which are typically found in countries such as Australia, Canada, and China. The process involves drilling and blasting rock formations to extract the ore, which is then transported to a processing facility where it is crushed and separated using gravity, flotation, and magnetic separation techniques. The resulting concentrate is then heated and treated with sulfuric acid to produce lithium carbonate.

Brine mining involves extracting lithium from brine deposits, which are typically found in salt flats or brine pools in countries such as Bolivia, Chile, and Argentina. The brine is pumped to the surface and placed in evaporation ponds, where it is left to evaporate over several months. The resulting concentrated brine is then treated with chemicals to remove impurities and processed to extract lithium carbonate.

Both hard rock and brine mining have environmental and social impacts, and there are concerns about the sustainability and ethics of lithium mining. Some companies are exploring alternative methods for extracting lithium, such as using geothermal energy to extract lithium from underground brines, or extracting lithium from seawater.





LITHIUM

DID YOU KNOW?

Lithium is an alkali metal. It's silver-white in pure form and is so soft it can be cut with a butter knife. It has one of the lowest melting points and a high boiling point for a metal.

WHAT EVERYDAY PRODUCTS CONTAIN LITHIUM?

Lithium is used in a variety of everyday products, including:

- Rechargeable batteries: Lithium-ion batteries are used in many portable electronic devices such as smartphones, laptops, and tablets, as well as in electric vehicles and renewable energy storage systems.

- Ceramics and glass: Lithium is used to produce ceramics and glass for applications such as cookware, glassware, and ovenware.

- Lubricants: Lithium is used as a thickener and lubricating agent in greases and lubricants for automotive and industrial applications.

- Pharmaceuticals: Lithium is used as a medication to treat bipolar disorder and other psychiatric conditions.

- Air treatment systems: Lithium chloride is used in air treatment systems to absorb moisture and regulate humidity levels.

- Aerospace and defense applications: Lithium is used in aerospace and defense applications, such as in the production of high-strength, lightweight alloys for aircraft components and missiles.

- Industrial batteries: Lithium is used in industrial batteries for applications such as backup power and uninterruptible power supplies.

- Overall, lithium is a versatile element with many applications across a wide range of industries, making it an important commodity in the modern world.

